

Bertie Place Recreation Ground

Ref	SPS8
Primary Flood Zone	Flood Zone 1
Vulnerability Classification	More vulnerable

Site Details

Site Location:	X:	451862	Address: Bertie Place, OX1 4XH
	Y:	204066	
Site Area:	0.67 ha		Additional Information: The site is currently occupied by a play area and sports court.
Proposed Function:	Residential		
Ground Level Range (m AOD):	56.128m-56.853m		

Fluvial Flood Risk

	1 in 100 Yr (+26%)	1 in 100 Yr (+84% CC)
Percentage Inundated (%)	20%	80%
Average Flood Depth (m)	0.06m (Max – 0.42m)	0.28m (Max – 0.85m)
Average Velocity (m/s)	0.04m/s (Max – 0.62m/s)	0.16m/s (Max – 0.79m/s)
Speed of Onset (hrs)	36 hrs	6 hrs

Summary: The site is at moderate risk of fluvial flooding, with a significant proportion of the site lying within Flood Zone 2 and a very small area in the north of the site within Flood Zone 3a and Flood Zone 3b (see fluvial flood map overpage). When accounting for climate change, for the design 100-year (+26% climate change) event, 20% of the site is modelled to be inundated. The hazard map for this event (see hazard map) shows the hazard rating to be low indicating limited flood depths and velocities. Whilst the extent and hazard is greater for the extreme climate change scenario, given the proposed development this scenario should not be relevant. Only a small part of the site lies within the historical flood map, this was from a flood event in January 2003.

Defence Infrastructure

Description:	Raised Embankment along right-hand bank of Hinksey Stream, 180m west of the site. Not considered to have significant impact on flooding at site.
Owner:	Unknown
Standard of Protection:	Unknown
Condition:	Unknown

Potential Access & Egress Route: Access/Egress from the site is possible via Bertie place. Subsequent travel would likely be along the Abingdon Rd (A4144) and then the Southern and Eastern-By-Pass roads towards lower risk areas in Headington (see access/egress map overpage).

Flood Risk: The initial parts of the route are shown to be within Flood Zone 2. Flood areas are also shown along the Southern Bypass Rd up to Heyford Hill roundabout; however, these are associated with two watercourse crossings and are not considered representative of risk along the bypass which sits a significant height above the two watercourses. The hazard rating is generally low at the start of the route which suggests that water is both shallow and slow moving. However, there are pockets of greater hazard (*danger for most*). For these reasons early warning will be essential.

It should be noted, that the River Thames catchment is dominated by chalk, it has relatively slow river response times to storm events, being groundwater, rather than surface water dominated. This increases the time taken for inundation which should allow for both adequate warnings and preparation in an extreme flood event

Pluvial & Other Sources of Flood Risk

The risk of pluvial flooding has been assessed using the EA surface water flood maps (see pluvial flood map overpage). The site is not at risk of pluvial flooding, with no flooding predicted in the 1000-year event. Some flooding is predicted in the surrounding road network, although high-risk areas are a significant distance from the site (see pluvial flood map overpage).

The underlying geology at the site comprises loamy and clayey floodplain soils with naturally high groundwater underlain by impermeable bedrock in the form of Mudstone. In this regard, groundwater flood risk is considered to be moderate.

The EA's Flood Risk from Reservoirs Map shows the site to be at risk during the wet-day scenario, it is not at risk in the dry-day scenario. Reservoir failure is a rare event with a very low probability of occurrence, so this risk is not considered a significant barrier to development at the site.

Based on the LLFA's flood incident data, there have been no recent historical flood incidents recorded close to the site.

FRA Implications, SuDS & Exception Test

Hydraulic modelling of the River Thames and its associated tributaries has indicated that the site is at moderate risk of fluvial flooding. A significant proportion of the site lies in Flood Zone 2 and a very small area in the north of the site within Flood Zone 3a and Flood Zone 3b. A residential development (more vulnerable) is proposed. More vulnerable infrastructure is permissible in Flood Zone 2 but must pass an Exception Test as specified in the latest NPPF if located in Flood Zone 3a, it is not permissible in Flood Zone 3b under any circumstances. When accounting for climate change, 20% of the site is at risk during the design 100-year (+26% Climate change) event.

The site's access route is largely flood free however parts of the route are at risk close to the site. In general flood hazard is low, however adequate flood warning will be necessary to ensuring that the routes can be utilised. A site-specific FRA should look into this in more detail.

The pluvial flood risk at the site is considered to be low, no flooding is predicted at the site for all events up to and including the 1000-year event and flood risk to the surrounding road network is limited. The drainage strategy for the proposed development should be suitably designed to manage additional runoff arising from the development and ensure that pluvial flood risk at the site and to third party land is not increased.

In assessing and demonstrating the viability of any SuDS solution for the site, a site-specific FRA should follow the Non-statutory technical standards for SuDS. The geology at the site comprises loamy and clayey soils underlain by impermeable bedrock in the form of Mudstone. This combined with a relatively high water table means that the significant use of infiltration SuDS solutions is unlikely to be viable. It is recommended that a geotechnical investigation is undertaken at this site to obtain further information relating to infiltration rates, this will confirm whether infiltration could be viable in some areas. Attenuated discharge to a watercourse or a sewer will also need to be considered as part of a site-specific FRA.

Overall, a residential development at the site should be achievable, with a large proportion of the site lying outside of Flood Zone 3a. It is important that a sequential approach is implemented at the site, prioritising more vulnerable residential dwelling in Flood Zone 1, with less vulnerable ancillary infrastructure (i.e. Car parking, open space) located in Flood Zone 2 if necessary.

Development may need to be set at a floor level to provide an appropriate freeboard above the flood level for the 100-year (+26% climate change) design event, estimated at 56.33 m AOD in the centre of the site. The majority of the site is higher than these levels, so ground raising should be limited and can be reduced by locating development outside of low-lying areas. A site-specific FRA should confirm any requirements with the EA including the need to provide compensatory storage and assess 3rd party impacts if ground raising is implemented.

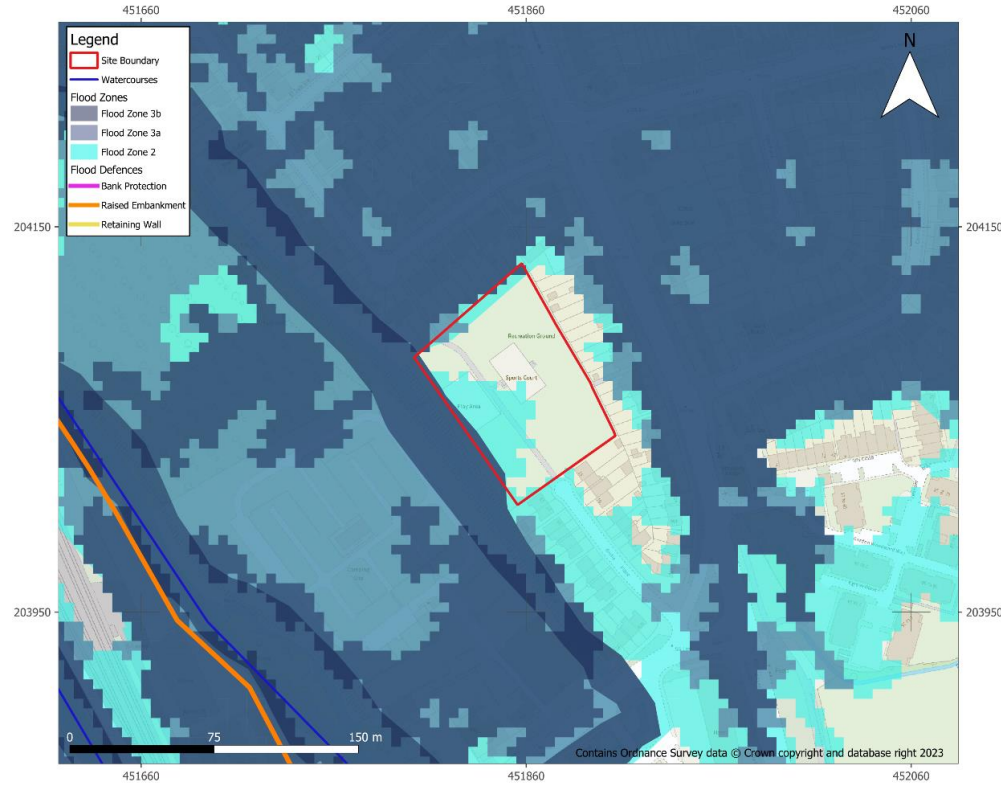
Fluvial Hazard	Moderate Risk
Pluvial Hazard	Low Risk
Developable	Proposed development type should be appropriate, a sequential approach to development is advised

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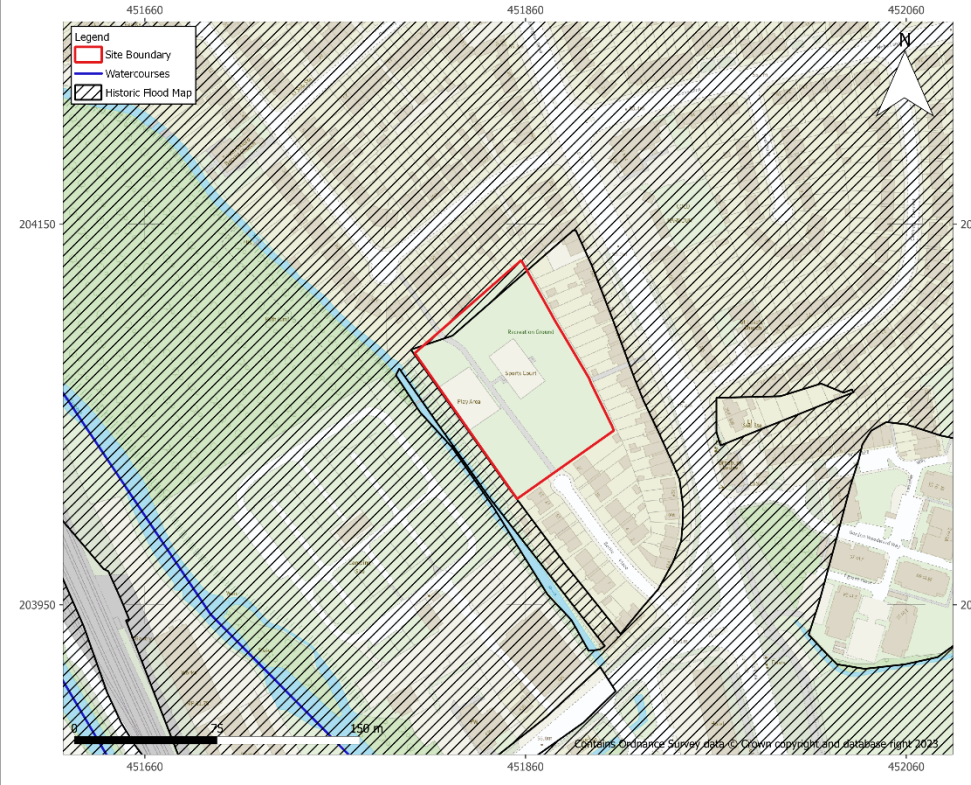
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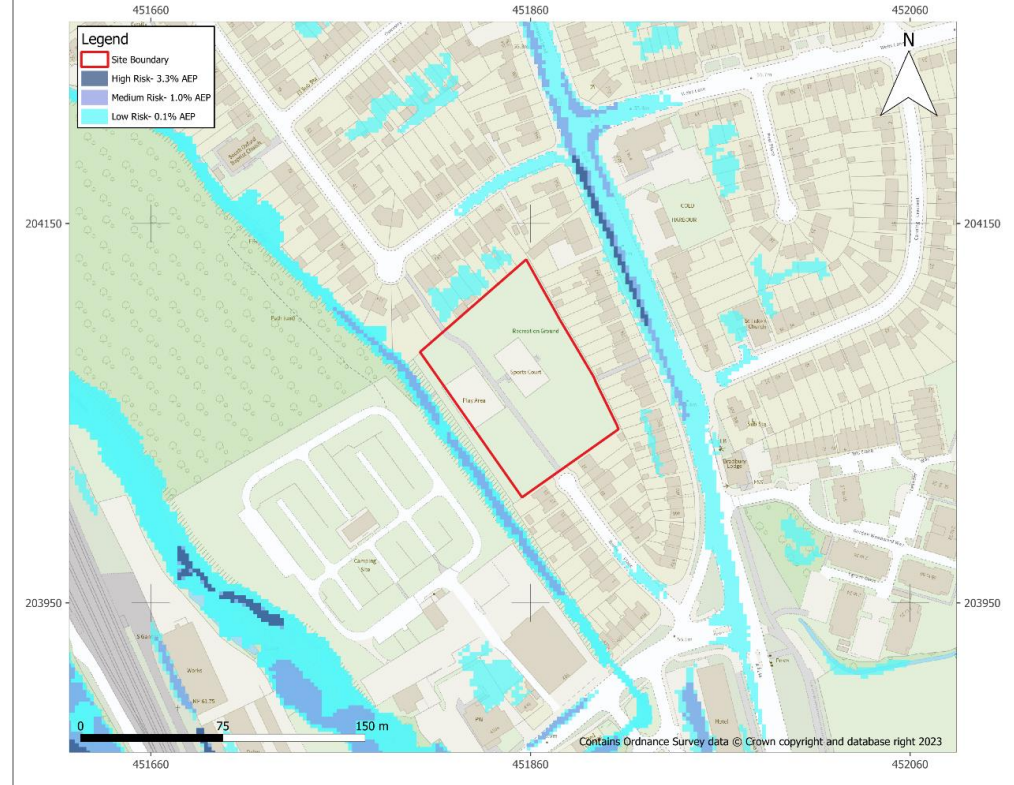
Fluvial Flood Map



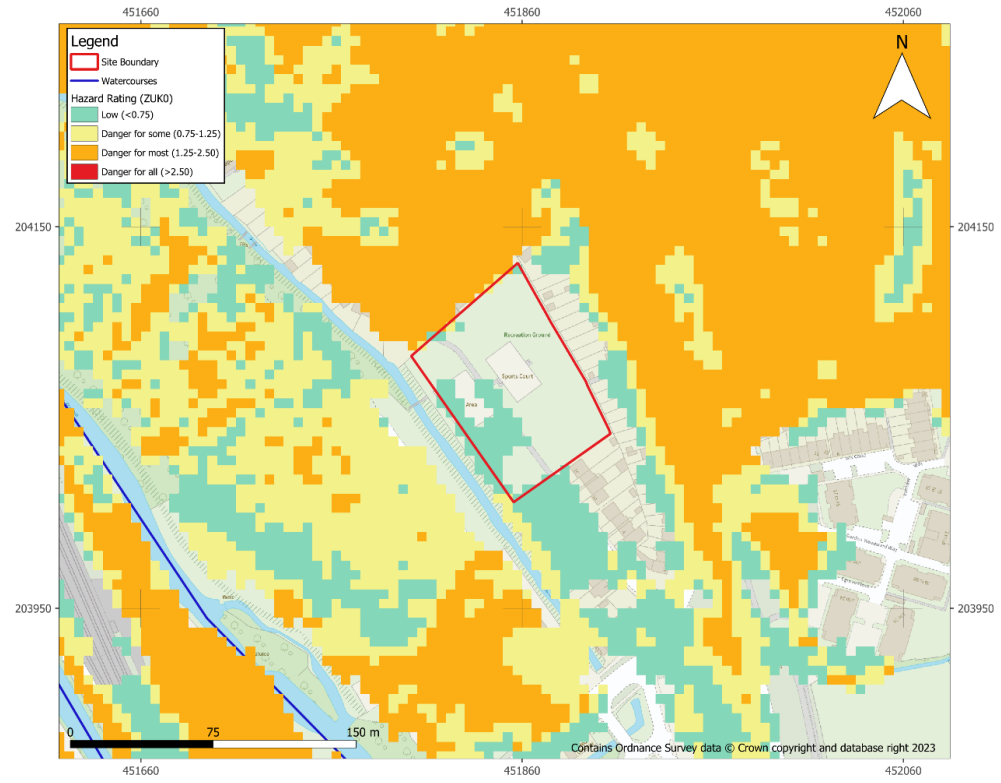
Historical Flood Map



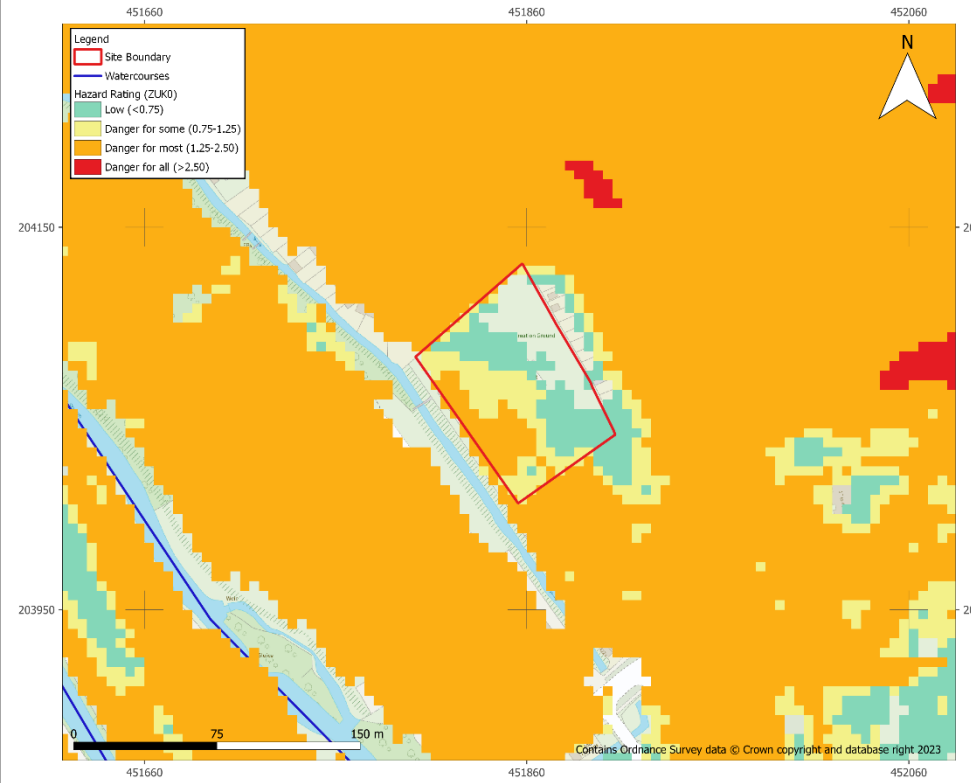
Pluvial Flood Map



Hazard Map (100 Yr + 26% Climate Change)



Hazard Map (100 Yr + 84% Climate Change)



Access/Egress Routes

